## (19) World Intellectual Property Organization

International Bureau





(43) International Publication Date 1 July 2004 (01.07.2004)

**PCT** 

## (10) International Publication Number WO 2004/055062 A1

(51) International Patent Classification7: C08F 4/64, 4/02

(21) International Application Number:

PCT/GB2003/005207

(22) International Filing Date: 3 December 2003 (03.12.2003)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

02358030.1

17 December 2002 (17.12.2002) E

(71) Applicant (for all designated States except US): BP CHEMICALS LIMITED [GB/GB]; Britannic House, 1 Finsbury Circus, London EC2M 7BA (GB).

(72) Inventors; and

- (75) Inventors/Applicants (for US only): JACOBSEN, Grant, Berent [GB/FR]; 343, chemin du Petit Nice, F-13320 Bouc-Bel-Air (FR). KIMBERLEY, Brian, Stephen [GB/FR]; 1116, rue Camille Saint Saens, F-13320 Bouc-Bel-Air (FR). LALANNE-MAGNE, Claudine, Viviane [FR/FR]; 32 bis, boulevard Pablo Neruda, F-13920 Saint Mitre Les Remparts (FR). MASTROIANNI, Sergio [FR/FR]; 33, avenue des Esperelles, Appartement 203, F-13500 Martigues (FR).
- (74) Agent: HAWKINS, David, George; BP International Limited, Patents & Agreements, Chertsey Road, Sunbury-on-Thames, Middlesex TW16 7LN (GB).
- (81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR,

KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (regional): ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

## Declarations under Rule 4.17:

- as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii)) for the following designations AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW, ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)
- as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii)) for all designations
  of inventorship (Rule 4.17(iv)) for US only
- of intentorship (Nate 1.17(17)) or OB one

## Published:

with international search report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: SUPPORTED OFTIEN POLYMERIZATION CATALYST

(57) Abstract: Supported catalyst systems are provided comprising (a) a transition metal compound, (b) an activator comprising (iii) an aluminoxane or (iv) a Group lilA metal or metalloid compound, and (c) a support material comprising an inorganic metal oxide, inorganic metal halide or polymeric material or mixtures thereof characterised in that the support material has been pretreated with a source of a transition metal atom. The preferred transition metal compounds are metallocenes and the source of the transition metal atom is typically a ferrous or cupric metal salt. The supported catalyst systems show improved activity and also may reduce fouling in gas phase fluidised bed processes.



